

**REMARKS**

In response to the Office Action of June 1, 2004, Applicants respectfully request reconsideration. Claims 1, 3-5, and 8-20 were previously pending in this application and claims 8-10 are amended herein solely to overcome the rejection under 35 U.S.C. §112. The application as presented is believed to be in condition for allowance.

Initially, Applicants would like to thank the Examiner for the courtesies extended during the telephone interview of October 1, 2004. The substance of the interview is summarized herein.

The Office Action rejected claims 8-10 under 35 U.S.C. §112, second paragraph, asserting that claims 8-10 depend from claim 7, which is cancelled. Applicant has amended each of claims 8-10 to depend from claim 20. Accordingly, it is respectfully requested that the rejection of claims 8-10 under 35 U.S.C. §112 be withdrawn.

The Office Action rejected claims 1, 3-5, and 8-20 under 35 U.S.C. §103(a) as purportedly being unpatentable over Byrn (5,533,020). Applicant respectfully traverses this rejection.

***The Asserted Modification Of Byrn Is Improper***

The Office Action admits that Byrn does not disclose or suggest a data stream selector that operates at substantially constant time intervals (*see* Office Action, page 6, first full paragraph). However, the Office Action asserts that one of skill in the art would have been motivated to modify Byrn to not assign priority levels to timing wheels and to use only a single wheel rate for the timing wheels to avoid experiencing undesirable jitter (*see* Office Action page 6, lines 4-18). The Office Action further asserts that modifying the system of Byrn in this manner would result in a system in which timing wheels operate at substantially constant time intervals. Applicants respectfully disagree with these assertions.

As discussed in Applicants' response of March 18, 2004, one of skill in the art would not have been motivated to modify the system Byrn in the manner suggested in the Office Action. Indeed, Byrn teaches away from such a modification. At column 3, lines 3-10, Byrn discusses the advantages of using timing wheels having different rates. Specifically, Byrn discloses that such wheels allow simple insertion of cells into queues based on priority, rate, and target

transmission time (TTT), enable the scheduling of cells with a wide range of transmission rates, and reduce the number of queue entries that must be visited in each scheduling cycle. Modifying Byrn in the manner suggested in the Office Action would result in the a system that does not provide these advantages. Further, there would be no need to implement a system with timing wheels, priorities and queues, if one were only transmitting data using a single transmission rate and a single priority.

Thus, one of skill in the art would not have been motivated to modify the system of Byrn in the manner asserted by the Examiner. Accordingly, it is respectfully requested that the rejection of claims 1, 3-5, and 8-20 be withdrawn.

**Applicants Claims Patentably Distinguish Over The Modified System**

However, even if one were to modify the system of Byrn in the manner asserted by the Examiner (the modified Byrn system), Applicants' claims patentably distinguish over the modified Byrn system.

**Claim 1**

Claim 1 is directed to a data transmission apparatus for transmitting data from a plurality of data streams over a data channel. The apparatus comprises: a data stream control memory for storing a scheduling variable for each data stream, each scheduling variable being indicative of a scheduled transmission timing for that data stream; a clock for maintaining a current timing indication; a data stream selector for, at substantially constant time intervals, comparing the scheduling variables stored in the memory and selecting the scheduling variable indicative of the earliest scheduled transmission timing and, if that scheduled transmission timing is not earlier than the current timing, generating an indication of the data stream corresponding to the selected scheduling variable and incrementing the selected scheduling variable; and a data transmission unit for receiving the indication of the data stream and transmitting an amount of data from that data stream over the data channel.

As discussed during the telephone interview of October 1, 2004, the modified Byrn system does not include a "scheduling variable being indicative of a scheduled transmission timing for that data stream," or "a data stream selector for, at substantially constant time

intervals, comparing the scheduling variables stored in the memory and selecting the scheduling variable indicative of the earliest scheduled transmission timing and, if that scheduled transmission timing is not earlier than the current timing, generating an indication of the data stream corresponding to the selected scheduling variable and incrementing the selected scheduling variable,” as recited in claim 1.

The Office Action asserts that Byrn discloses a scheduling variable as claimed in the form of priority  $p$  and wheel rate  $r$ . (See Office Action, page 3, line 13 – page 4, line 4). However, the modified Byrn system does not assign priorities ( $p$ ) and a single timing wheel rate ( $r$ ) is used. Thus, the priority  $p$  does not exist in the modified Byrn system, and wheel rate  $r$  is the same (i.e., not a variable) for all wheels. As wheel rate  $r$  is the same for all wheels, wheel rate  $r$  is not “indicative of a scheduled transmission timing for that data stream”, as required by the claim.

Further, as Applicants pointed out during the telephone interview, the modified Byrn system does not include a data stream selector for **incrementing the scheduling variable**. Indeed, as discussed above, the purported scheduling variable in the modified Byrn system is a single timing wheel rate  $r$ , which is fixed and does not change. There is no disclosure or suggestion in Byrn that wheel rates are ever incremented, as the values  $p$  and  $r$  are constant values and not variables that may be incremented. In addition, the single wheel of Byrn may contain cells from different virtual connections. Thus, rotating the wheel of Byrn to service cells stored at a subsequent wheel slot does not correspond to incrementing a **selected** scheduling variable, but instead servicing a different virtual connection. Thus, claim 1 patentably distinguishes over the modified Byrn system. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 3-5 and 8-18 depend from claim 1 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 3-5 and 8-18 under 35 U.S.C. §103(a) be withdrawn.

### **Claim 19**

Claim 19 is directed to a data transmission apparatus for transmitting data from a plurality of data streams over a data channel. The apparatus comprises: a data stream control

memory for storing a scheduling variable and an increment variable for each data stream, wherein each scheduling variable is indicative of a scheduled transmission timing for that data stream; a clock for maintaining a current timing indication; a data stream selector for, at substantially constant time intervals, comparing the scheduling variables stored in the memory and selecting the scheduling variable indicative of the earliest scheduled transmission timing and, if that scheduled transmission timing is not earlier than the current timing, generating an indication of the data stream corresponding to the selected scheduling variable and incrementing the selected scheduling variable by adding the selected scheduling variable to the increment variable for the corresponding data stream; and a data transmission unit for receiving the indication of the data stream and transmitting an amount of data from that data stream over the data channel.

As should be clear from the discussion above, the modified Byrn system fails to disclose or suggest, “a data stream control memory for storing a scheduling variable and an increment variable for each data stream, wherein each scheduling variable is indicative of a scheduled transmission timing for that data stream.” Thus, claim 19 patentably distinguishes over the modified Byrn system. Accordingly, it is respectfully requested that the rejection of claim 19 under 35 U.S.C. §103(a) be withdrawn.

#### **Claim 20**

Claim 20 is directed to a data transmission apparatus for transmitting data from a plurality of data streams over a data channel. The apparatus comprises: a data stream control memory for storing a scheduling variable for each data stream, each scheduling variable being indicative of a scheduled transmission timing for that data stream; a clock for maintaining a current timing indication; a data stream selector for, at substantially constant time intervals, comparing the scheduling variables stored in the memory and selecting the scheduling variable indicative of the earliest scheduled transmission timing and, if that scheduled transmission timing is not earlier than the current timing, generating an indication of the data stream corresponding to the selected scheduling variable and incrementing the selected scheduling variable; a data transmission unit for receiving the indication of the data stream and transmitting an amount of data from that data stream over the data channel; and a data transmission controller

operable to override the data stream selector and provide to the data transmission unit an indication of a data stream from which to transmit an amount of data.

As should be clear from the discussion above, the modified Byrn system fails to disclose or suggest, “a data stream control memory for storing a scheduling variable for each data stream, each scheduling variable being indicative of a scheduled transmission timing for that data stream.” Thus, claim 20 patentably distinguishes over the modified Byrn system. Accordingly, it is respectfully requested that the rejection of claim 20 under 35 U.S.C. §103(a) be withdrawn.

**CONCLUSION**

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,

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